SST49LF016C / M50FW080-M50FW016
Firmware Hub Device Comparison

Application Note
July 2008

INTRODUCTION

This Application Note is a comparative list of features for the SST49LF016C and the ST® M50FW080 and M50FW016 Firmware Hub Devices (FWH). Each device is used as BIOS storage and functions as a boot device when the first fetch cycles of the microprocessor are executed.

DESCRIPTION

The following tables detail the features, the software commands, and pin assignments for each device. All devices support a two Bus Write cycle command structure for FWH write cycles. A guide to mapping a consistent format 8 Mbit FWH BIOS image to a 16 Mbit FWH device is provided.

TABLE 1: Features

Features	SST49LF016C	M50FW080	M50FW016
Block/Sector Definition	64K / 4K	64K / N/A	64K / N/A
Top Block and Block's Partitions	16K Top block 8K/8K/32K[1]	64K	64K
Programming Mode Supported	AAI (Serial)	A/A Mux	A/A Mux
Manufacturer ID/Device ID	BFH / 5CH	20H / 2DH	20H / 2EH
V_{PP} Pin	No	Yes	Yes

T1.2075

1. 16K T-BLOCK_LK Memory Map Register Address is FFBFC002H
   8K T_MINUS01_LK Memory Map Register Address is FFBFA002H
   8K T_MINUS03_LK Memory Map Register Address is FFBF8002H
   32K T_MINUS03_LK Memory Map Register Address is FFBF0002H

Software Command Cycles

TABLE 2: Software Command Cycles

Command Sequence	SST49LF008A	M50FW080	M50FW016
Byte-Program	40H or 10H (Single, double, and quadruple byte-programs.)	40H or 10H	40H or 10H (Single byte-program)
Quadruple Byte-Program	No Op_code (Supported in Byte-program)	30H (A/A Mux only)	30H (Mode/A/A Mux mode)
Sector-Erase (4K)	30H/D0H	Not Supported	See Quadruple By
Software ID Entry	90H	90H or 89H	90H or 89H
Software ID Exit		FFH	90H or 98H
User-Security-ID-Program	A5H	Not Supported	Not Support
User-Security-ID-Program-Lockout	85H/00H	Not Supported	Not Supported

T2.2075

8 Mbit BIOS Image Mapping: M50FW080 to SST49LF016C

To map a modified BIOS image of the M50FW080 to the SST49LF016C, the BIOS ROM must occupy the top half memory address of the SST49LF016C. The starting address of the SST49LF016C memory map is 100000H, and starting address of the 4-GByte System Memory is FFF00000H.

Application Note

Pin Assignments

TABLE 3: 32-Lead PLCC (NHE)[1, 2, 3]

Pin	SST49LF016C	M50FW080
1	**NC (NC)[4]**	**V_{PP} (V_{PP})**
2	RST#	$\overline{RP}$ ($\overline{RP}$)
3	GPI3	A9 (FGPI3)
4	GPI2	A8 (FGPI2)
5	[LD#] GPI1	A7 (FGPI1)
6	[RY/BY#] GPI0	A6 (FGPI0)
7	[AAI] WP#	A5 ($\overline{WP}$)
8	TBL#	A4 ($\overline{TBL}$)
9	ID3	A3 (ID3)
10	ID2	A2 (ID2)
11	ID1	A1 (ID1)
12	ID0	A0 (ID0)
13	LAD0	DQ0 (FWH0)
14	LAD1	DQ1 (FWH1)
15	LAD2	DQ2 (FWH2)
16	V_{SS}	V_{SS} (V_{SS})
17	LAD3	DQ3 (FWH3)
18	NC	DQ4 (RFU)
19	NC	DQ5 (RFU)
20	NC	DQ6 (RFU)
21	NC	DQ7 (RFU)
22	**NC**	**R$\overline{B}$ (RFU)**
23	LFRAME#	$\overline{W}$ (FWH4)
24	INIT#	$\overline{G}$ ($\overline{INIT}$)
25	V_{DD}	V_{CC} (V_{CC})
26	**NC**	**V_{SS} (V_{SS})**
27	NC	NC (NC)
28	**NC**	**NC (NC)**
29	NC	IC (IC)
30	GPI4	A10 (FGPI4)
31	LCLK	R$\overline{C}$ (CLK)
32	NC	V_{CC} (V_{CC})

T3.2075

1. ( ) = Designates Firmware Hub Mode for STM devices
2. [ ] = Needed for AAI Programming Mode on SST device
3. NC = not internally connected
4. Bold = Cross product pin inconsistencies

TABLE 4: 32-Lead TSOP (WHE)[1, 2, 3]

Pin	SST49LF016C	M50FW080
1	NC	NC (NC)
2	NC	NC (NC)
3	NC	NC (NC)
4	**NC[4]**	**NC (V_{SS})**
5	NC	IC (IC)
6	GPI4	A10 (FGPI4)
7	LCLK	R$\overline{C}$ (CLK)
8	NC	V_{CC} (V_{CC})
9	**NC**	**V_{PP} (V_{PP})**
10	RST#	$\overline{RP}$ ($\overline{RP}$)
11	GPI3	A9 (GPI3)
12	GPI2	A8 (GPI2)
13	[LD#] GPI1	$\overline{A7}$ (GPI1)
14	[RY/BY#] GPI0	A6 (GPI0)
15	[AAI] WP#	A5 ($\overline{WP}$)
16	TBL#	A4 ($\overline{TBL}$)
17	ID3	A3 (ID3)
18	ID2	A2 (ID2)
19	ID1	A1 (ID1)
20	ID0	A0 (ID0)
21	LAD0	DQ0 (FWH0/LAD0)
22	LAD1	DQ1 (FWH1/LAD1)
23	LAD2	DQ2 (FWH2/LAD2)
24	V_{SS}	V_{SS} (V_{SS})
25	LAD3	DQ3 (FWH3/LAD3)
26	NC	DQ4 (RFU)
27	NC	DQ5 (RFU)
28	NC	DQ6 (RFU)
29	NC	DQ7 (RFU)
30	**V_{DD}**	**NC (NC)**
31	LFRAME#	$\overline{W}$ (FWH4/$\overline{FRAME}$)
32	INIT#	$\overline{G}$ ($\overline{INIT}$)

T4.2075

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TABLE 5: 40-Lead TSOP (EIE)[1, 2, 3]

Pin	SST49LF016C	M50FW080	M50FW016
1	NC	NC (NC)	NC (NC)
2	**NC[4]**	**IC (IC)**	**IC (IC)**
3	NC	NC (NC)	NC (NC)
4	NC	NC (NC)	NC (NC)
5	NC	NC (NC)	NC (NC)
6	NC	NC (NC)	NC (NC)
7	GPI4	A10 (FGPI4)	A10 (FGPI4)
8	NC	NC (NC)	NC (NC)
9	LCLK	R$\overline{C}$ (CLK)	R$\overline{C}$ (CLK)
10	**NC**	**V_{CC} (V_{CC})**	**V_{CC} (V_{CC})**
11	**NC**	**V_{CC} (V_{PP})**	**V_{CC} (V_{PP})**
12	RST#	$\overline{RP}$ ($\overline{RP}$)	$\overline{RP}$ ($\overline{RP}$)
13	NC	NC (NC)	NC (NC)
14	NC	NC (NC)	NC (NC)
15	GPI3	A9 (FGPI3)	A9 (FGPI3)
16	GPI2	A8 (FGPI2)	A8 (FGPI2)
17	[LD#] GPI1	A7 (FGPI1)	A7 (FGPI1)
18	[RY/BY#] GPI0	A6 (FGPI0)	A6 (FGPI0)
19	[AAI] WP#	A5 ($\overline{WP}$)	A5 ($\overline{WP}$)
20	TBL#	A4 ($\overline{TBL}$)	A4 ($\overline{TBL}$)
21	ID3	A3 (ID3)	A3 (ID3)
22	ID2	A2 (ID2)	A2 (ID2)
23	ID1	A1 (ID1)	A1 (ID1)
24	ID0	A0 (ID0)	A0 (ID0)
25	LAD0	DQ0 (FWH0)	DQ0 (FWH0)
26	LAD1	DQ1 (FWH1)	DQ1 (FWH1)
27	LAD2	DQ2 (FWH2)	DQ2 (FWH2)
28	LAD3	DQ3 (FWH3)	DQ3 (FWH3)
29	V_{SS}	V_{SS} (V_{SS})	V_{SS} (V_{SS})
30	V_{SS}	V_{SS} (V_{SS})	V_{SS} (V_{SS})
31	**NC**	**V_{CC} (V_{CC})**	**V_{CC} (V_{CC})**
32	NC	DQ4 (RFU)	DQ4 (RFU)
33	NC	DQ5 (RFU)	DQ5 (RFU)
34	NC	DQ6 (RFU)	DQ6 (RFU)
35	NC	DQ7 (RFU)	DQ7 (RFU)
36	NC	R$\overline{B}$ (RFU)	R$\overline{B}$ (RFU)
37	INIT#	$\overline{G}$ ($\overline{INIT}$)	$\overline{G}$ ($\overline{INIT}$)
38	LFRAME#	$\overline{W}$ (FWH4)	$\overline{W}$ (FWH4)
39	**V_{DD}**	V_{CC} (V_{CC})	RFU (RFU)
40	**NC**	**V_{SS} (V_{SS})**	**V_{SS} (V_{SS})**

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1. ( ) = Designates Firmware Hub Mode
2. [ ] = Needed for AAI Programming Mode on SST device
3. NC = not internally connected
4. Bold = Cross product pin inconsistencies

CONCLUSION

There are slight differences between the SST49LF016C and the M50FW080/M50FW016 devices. See *SST49LF008A 8 Mbit Firmware Hub Data Sheet* for detailed information on the device features.

SST49LF016C software drivers are supported by most industry leading BIOS vendors making BIOS and programming support readily available.

The ST is registered trademark of STMicroelectronics. STMicroelectronics M50FW080 and M50FW016 data used in this document was taken from the M50FW080 data sheet, revision 10; and the M50FW016 data sheet, revision 6.